

CLAIMS

1. Mechanical pencil, comprising tubular body (2) extending along a longitudinal axis (X) between rear end and a front end (2a) provided with an orifice, through which a lead (6) is capable of emerging, and a lead-advancing mechanism arranged in the tubular body, which advancing mechanism comprises:

- a longitudinally movable member (20) having a forwardly oriented bearing surface (21a);
- a chuck (30) having a tubular portion (31) connected to the movable member, and a head (32) capable of being clamped on the lead;
- a clamping ring (18) which is movable longitudinally with respect to the chuck and to the tubular body and which is designed to cooperate with the head of the chuck;
- an elastic element (19) having a front end and a rear end (19b) bearing against the bearing surface of the movable member, the said elastic being designed to bias clamping ring (18) against the head (32) of the chuck when the advancing mechanism is in rest position, characterized in that a bush (40), movable longitudinally with respect to the chuck and to the body, is arranged between the clamping ring (40) and the front end (19a) of the elastic element, in that the chuck (30) is movable longitudinally with respect to the movable member (20) over a defined stroke, called the rearward stroke, and in that the body (2) has a front stop (4b; 55) designed to limit the forward displacement of the bush (40).

2. Mechanical pencil according to Claim 1, wherein the front stop (4b; 55) is formed by a radially inner rim which cooperates with a peripheral portion of the front end of the bush (40).

3. Mechanical pencil according to Claim 1 or 2, in which the elastic element (19) is a helical compression spring.

4. Mechanical pencil according to any one of the Claims 1 to 3, in which the tubular portion (31) of the chuck has, from its rear end, first and second radially outer rims (33, 34), and in which the front end of the movable member has an orifice (21c), through which the chuck (30) slides between the first and second rims, the said first and second rims being spaced apart longitudinally in order to limit this sliding of the chuck (30) to a value equal to the rearward stroke.
5. Mechanical pencil according to Claim 4, in which the tubular portion (31) of the chuck has a frustoconical portion (35) extending from the first rim (33) as far as the rear end (31b) of the chuck.
6. Mechanical pencil according to any of the Claims 1 to 5, in which the body (2) has rear stop (27a; 54b) designed to cooperate with a complementary stop of the movable member and to limit the rearward displacement of the movable member (20), the longitudinal distance between the front stop (4b; 55) of the body and said rear stop (27a; 54b) being designed so that the clamping ring (18) keeps the chuck clamped under the action of the bush (40) when the advancing mechanism is in the rest position.
7. Mechanical pencil according to Claim 6, in which the rear stop (27a) is formed by a radially inner rim of the body, the said rim cooperating with a radially outer shoulder (29) of the movable member.
8. Mechanical pencil according to Claim 7, in which the body has an aperture (54) extending longitudinally as far as a rear end, and in which the movable member (20) has a pin (53) projecting into the aperture, the rear end (54b) of the said aperture forming the rear stop.
9. Mechanical pencil according to any one of Claims 6 to 8, in which at least one elastically deformable compensation member (50) is arranged between the front stop of the body and the bush (40) or between the rear stop of the body and the complementary stop of the movable member (20).
10. Mechanical pencil according to Claim 9, in which the compensation member (50) comprises at least one tab (51) elastically deformable in a longitudinal direction and produced in one piece with the body (2).

11. Mechanical pencil according to any of Claims 1 to 10, in which the body (2) has a rearward movement stop (52; 56) designed to limit the rearward displacement of the clamping ring (18) from the rest position of the advancing mechanism to a value at most equal to the rearward stroke of the chuck (30).
12. Mechanical pencil according to Claim 11, in which the rearward movement stop is formed by at least one stud (52) integral with the body and extending radially inwards between the bush (40) and the movable member (20), said stud being designed to limit the rearward displacement of the bush.
13. Mechanical pencil according to Claim 12, in which the rearward movement stop is formed by a radially inner rim (56) of the body, said rim being designed to cooperate with a radially outer shoulder (18a) of the clamping ring.
14. Mechanical pencil according to any of Claims 1 to 13, in which the chuck (30) is capable of driving the lead (6) forwards over a defined stroke, called the advancing stroke, from the rest position of the advancing mechanism, said advancing stroke being substantially equal to half the rearward stroke.
15. Mechanical pencil according to any of Claims 1 to 14, in which the elastic element (19) is designed to exert on the bush (40) a pressure of between 2 and 5 newtons, preferable 3 newtons, when the advancing mechanism is in the rest position, and a pressure of between 5 and 10 newtons, preferably 8 newtons, when the chuck (30) has executed a rearward displacement substantially equal to the rearward stroke.